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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

September 28, 2017

Kris McCaig
Project Manager
Teck American Incorporated
501 North Riverpoint Boulevard, Suite 300
Spokane, Washington 99202

Re: Notice of Dispute, Upper Columbia River Remedial Investigation and Feasibility Study- Response to EPA LOE for Assessment and Estimation of Upland Soils on the UCR (dated July 22, 2016)

Dear Ms. McCaig:

The U. S. Environmental Protection Agency (EPA) is pleased to have worked with Teck American Incorporated (TAI) to resolve this dispute informally, and that TAI has agreed to move forward with responding to EPA's Level of Effort (LOE) paper. EPA is responding to the technical comments from your letter, "2. The LOE is Biased to Assume that All "Elevated" Metals Concentrations in Soils are Due to the Trail Smelter; Therefore, it will not Accomplish the Study Objectives of Identifying Natural and Anthropogenic Background."

Please feel free to contact me should you wish to discuss. I can be reached at (206) 553-0323, or at tonel.monica@epa.gov.

Sincerely,

Monica Tonel

Monica Tonel
UCR Project Team

Enclosure

cc: Cindy Marchand, Confederated Tribes of the Colville Reservation (electronic)
Randy Connolly, Spokane Tribe of Indians (electronic)
Dan Audet, U. S. Department of the Interior (electronic)
John Roland, Washington Department of Ecology (electronic)

Response #	Teck Comment	EPA Response
1	Any effort to investigate background must be undertaken in a scientifically objective and unbiased way. That is, it should *test* the hypothesis not set up a study bound to confirm it. Specifically, it should not presuppose that all or most of the elevated metals concentrations measured in upland soils are the result of Trail smelter emissions by ignoring the impacts of other sources, particularly at a site whether there are plainly numerous sources, including a more proximate smelter. Any conclusions from a true scientifically valid background study must consider the numerous known metals sources to the study area, both anthropogenic and naturally occurring, as well as the geographic scale and geologic variability of the study area.	The second sentence of the LOE states that the goal of the LOE is to estimate Area Background and potentially Natural Background concentrations for contaminants of interest (COIs) and contaminants of potential concern (COPCs). The LOE is based on EPA's analysis of current information collected as part of the RI/FS and Site Assessment and is consistent with EPA and Ecology guidance. The LOE considers all likely sources of elevated metals concentrations in the study area (see Criteria and Applications Section). The LOE includes the first three steps of an estimation type of DQO rather than a decision DQO (EPA, 2006), therefore, Step 2 of the LOE includes principal study questions and estimation statements rather than null and alternative hypotheses statements.
2	The LOE proposes using existing data to assess and estimate background soil concentrations of metals, both contaminants of interest (COIs) and contaminants of potential concern (COPCs), as well as "useful indicator elements" that may represent either "area background" or anthropogenic background, or potentially "natural background" conditions. However, in doing so, the LOE presupposes that Trail smelter aerial emissions are the primary contributor to contamination in the region, and the only source of above-background metals by inference.	The Criteria and Application section of Step 3 states that the LeRoi smelter and other mine and mill working areas are potential sources of contamination. EPA continues to require an assessment and estimation of background metal concentrations in upland soils using existing data. Data collected from areas where soil metal concentrations are known to be elevated should not be included in the background analysis. The need for additional data will be determined after assessment and analysis of existing data are completed, as defined in the LOE.
3	The LOE fails to recognize that anthropogenic background, or area background, has been affected by aerial and direct deposition from multiple smelters, including the obvious Northport smelter, numerous mines and milling operations, transportation corridors, agricultural impacts from herbicides and pesticides, windblown sediment, historic flooding, and many other more locally diverse sources.	The LOE recognizes anthropogenic factors which may influence background. Ecology's MTCA definition of ***area background*** (ECY, 2007) and EPA's definition of ***anthropogenic background*** (EPA, 2002a,b) include geogenic sources of metals and anthropogenic sources of metals that are not related to the site (e.g., the Trail smelter); these terms are used throughout the LOE. Step 3 lists examples of anthropogenic sources that must be considered; many of these sources are included in the list of sources that TAI states are not considered. Other than in the immediate proximity of the historic LeRoi operations, other potential sources mentioned have been assessed as minor, potential localized contributors to metal enrichment, not widespread across upland UCR soils. This has been demonstrated by both RI-specific and other studies conducted in the UCR watershed region such as the Upper Columbia River Preliminary Assessments and Site Inspections conducted by EPA at thirty-eight (38) mine/mill sites in Stevens County, WA (E & E, 2002a) and at twenty-one (21) mine/mill sites in Pend Oreille County, WA (E & E, 2002b).

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3a	The LOE states that "[t]he U.S. EPA believes existing data and studies are likely sufficient to estimate soil background levels in the UCR basin in Washington State," but offers no support for this statement or belief.	Support for EPA's statement is provided as Attachment A of the LOE. Attachment A provides summaries of key studies, NURE being the largest, and data that met the criteria listed in the 'Criteria and Applications' section of the LOE. Teck relied on the NURE database to develop a preliminary background estimate in the RI Work Plan. The EPA LOE recognizes this and has identified additional sources of background data to complement the NURE database.
4	Teck objects to EPA's reliance on a 2015 memo by SRC (EPA's consultant) that identifies the Teck smelter as the primary source of upland metals contamination. Teck believes that the LOE's reliance on this assumption will result in other anthropogenic source metal concentrations, including specifically the Northport smelter, being erroneously included in the designation of Trail-impacted areas and excluded from natural background or area background.	The LOE clearly states the goal of the LOE is to estimate **area background** and potentially **natural background** concentrations for COIs and COPCs. See also responses, #1-3. Step 3 of the DQO memo states that data being considered for use in developing background concentrations will be evaluated to determine if they reflect anthropogenic (not site-related) influences (based on concentration, location and data documentation). The assessment of secondary sources, including the Northport/LeRoi Smelter, is part of the area background estimation effort. All potential sources of metals will be considered in the background estimations.
5	The LOE states that "[t]he UCR RI/FS has not finalized estimates of the background concentrations of metals in soil, though others have." What others? Citations to these other studies seem particularly relevant to the DQO process, but such citations are missing.	Although others have not estimated background concentrations for the Site, Church (2010a) estimated background concentrations for drainage basins that are included within the UCR. In addition, the Washington Department of Ecology reports natural background concentrations by county in the 1994 guidance that may be applicable to the Site.
6	The LOE states that "[e]stimating upland background requires avoiding or minimizing areas with known or anticipated anthropogenic impacts." True, but the LOE does not actually include an approach for identifying the numerous types of potential sources of impacts or explain how impacted areas will be avoided.	The LOE does include an approach for identifying sources. The LOE (Attachment A) applied several, conservative screening criteria that influenced the determination of eligible background studies and data sets. A similar level of conservative, judgmental screening was applied to the RI upland soil investigation to avoid known or potential anthropogenic impacts.
7	The LOE does not contemplate the soil type, age, origin, organic content, lithology, depth of sediment, watershed, etc., and how background values would change accordingly.	Please see response #6. This should be addressed in Steps 4-7 of the DQOs, which TAI will be developing and specifically informed by the attached study reviews and screening provided in the LOE.
8	The LOE does not propose appropriate statistical methods for calculating background values.	Please see response #6. This should be addressed in Steps 4-7 of the DQOs, which TAI will be developing.

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9	The LOE calls for an analyte list (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, cobber, fluoride, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silicon, silver, sodium, sulfur, tin, thallium, uranium, vanadium, and zinc) that is not sufficient for distinguishing background from potential Trail impacts or other anthropogenic sources of metals because the list is not diagnostic as to particular sources.	The list TAI refers to is the list of metals included in the principal study question (Step 2) that require background concentrations. As stated in response #6, the LOE includes Steps 1-3; the analytical approach for estimating area/anthropogenic and natural background should be addressed in Steps 4-7, which TAI will be developing. EPA agrees that the approach for estimating background will very likely include data other than the concentration of the metals that are listed in Step 2. The dispute resolution (EPA, 2017) lists some additional types of data that may be useful for estimating the background concentrations of the metals listed in Step 2.
10	EPA is focused exclusively on "natural background" only. [The Alternative Outcomes section (p4)] does not get at anthropogenic inputs from other sources. It assumes, against the weight of the evidence, that all metals above *natural* background are sourced to the Trail smelter.	The comment reflects a potential misunderstanding of the logic incorporated in the alternative outcomes in Step 2. The Alternative Outcomes section required sufficient data to estimate **natural** background, as defined by Ecology (Ecology, 2007). The assumption was that it requires more information to estimate natural background than area background. Depending on the analytical approach(es) developed in steps 4-7, this may or may not be true. Development of DQOs is an iterative process; the Alternative Outcomes (as well as the rest of the DQOs) might be refined as appropriate to ensure consistency with Steps 4-7, which will be developed by TAI.

References:

Ecology and Environment, Inc. (E & E), 2002a, Preliminary Assessments and Site Inspections Report Upper Columbia River Mines and Mills Stevens County, Washington, prepared for the United States Environmental Protection Agency, October 2002, Superfund Technical Assessment and Response Team Contract 68-S0-01-01, TDD: 01-02-0028. Available online at https://yosemite.epa.gov/R10/CLEANUP.NSF/UCR/Technical+Documents.

Ecology and Environment, Inc. (E & E), 2002b, Preliminary Assessments and Site Investigations Report Lower Pend Oreille River Mines and Mills Pend Oreille County, Washington, prepared for the United States Environmental Protection Agency, April 2002, Superfund Technical Assessment and Response Team Contract 68-S0-01-01, TDD: 01-08-0009. Available online at https://yosemite.epa.gov/R10/CLEANUP.NSF/UCR/Technical+Documents.

SRC, 2015a. Memorandum from SRC (Bill Thayer and Gary Diamond) to EPA Region 10 (Laura Buelow and Marc Stifelman), Subject: Draft Summary Regression Analyses of Metal Concentrations in Residential and Upland Soils. May 27.

SRC, 2015b. Memorandum from SRC (Bill Thayer) to EPA Region 10 (Laura Buelow), Subject: Windward Evaluation of SRC Regression Analysis of UCR Soils Data. July 1.

United States Environmental Protection Agency (U.S. EPA). (2002a). Role of background in the CERCLA cleanup program. April 26. OSWER Directive 9285.6-07P. Available online at http://www.epa.gov/superfund/programs/risk/role.pdf.

United States Environmental Protection Agency (U.S. EPA). (2002b). Guidance for comparing background and chemical concentrations in soil for CERCLA sites. EPA 540-R-01-003. OSWER 9285.7-41 September, 2002. Available online at http://www.epa.gov/oswer/riskassessment/pdf/background.pdf.

United States Environmental Protection Agency (U.S. EPA). (2006). Guidance on Systematic Planning Using the Data Quality Objectives. EPA QA/G-4. U.S. Environmental Protection Agency, Office of Environmental Information. EPA/240/B-06/001. February. Available online at: http://www.epa.gov/quality/qs-docs/g4-final.pdf.

Washington Department of Ecology (Ecology). (2007). Model Toxics Control Act.